Recharging with the AC Charger
Recharging with the AC charger is a true 'plug in and forget' charging method. To use it follow these simple steps:
1. Disconnect any 12v DC accessories and for the RPP120 & RPP135 models switch off the inverter.
2. Plug the AC charger into a standard AC wall outlet.
3. Insert the AC charger cable end into the charger input socket.
4. As the PowerPack charges, the recharge indicator will glow amber. A typical full recharge will take up to 36 hours.
5. When fully charged, the recharge indicator changes to green and the PowerPack is ready to use.
6. When fully charged the charging current automatically reduces to a low maintenance level and the PowerPack may be left permanently connected to the AC socket. In addition, should your utility power be interrupted, the charging process will automatically restart when power returns.

Caution: Do not attempt to power any DC accessories or AC (RPP120 & RPP135 models only) whilst charging.

Recharging from Your Vehicle
Using the DC charging cable allows you to charge the PowerPack whilst on the move. Place the PowerPack in a safe secure position. Simply plug either end of the DC lead into your PowerPack DC socket and the other end into your vehicle DC socket. Although the charge regulation circuitry in the PowerPack does not work when charging with this method most vehicle voltage regulators will ensure the PowerPack does not become overcharged.
Disconnect the charging lead from the vehicle when the PowerPack is fully charged or when the vehicle engine is not running.
Caution: Do not use the compressor whilst the PowerPack is on charge. (RPP110 & RPP135 models only).
Caution: Do not use the AC Inverter whilst the PowerPack is on charge. (RPP120 & RPP135 models only).

Battery Storage
The battery used in this PowerPack is high quality and a state of the art design. If the battery is correctly maintained it can serve as a reliable power source for years to come.
To maintain the battery life, it is important to recharge the PowerPack after each use. Recharge fully every 3 months if placed in storage and store in a location (0˚C - 30˚C).
Caution: Discharging the battery below 10v will damage the battery and shorten life expectancy.

Battery Replacement
1. Ensure all DC and AC (RPP120 & RPP35 models only) accessories have been detached.
2. Unscrew and remove all screws from the back of the power pack.
3. Unscrew connectors from the battery terminal and carefully remove the battery. Be careful not to touch the two battery terminals together with the same object.
4. When putting in a new battery connect the black negative (-) lead to the negative terminal on the battery, usually marked negative or with the symbol (-). Connect the red positive (+) lead to the positive battery terminal on the battery, usually marked positive or with the symbol (+).
5. When you are confident the correct polarity of the cables has been reached, replace the back cover and tighten with the screws.
6. You are responsible for the disposal of your discharged battery. There are certain regulations on the disposal of batteries. Please contact your local authorities regarding their procedures on battery recycling.

Specifications for PowerPack	
Internal battery	Sealed lead acid
Internal battery voltage (nominal)	12v
Internal battery capacity	20Ah
DC socket maximum continuous load	12A
DC power socket circuit breaker (with auto reset)	12A
Built in fluorescent lamp (replaceable)	4W tubes x2
Jump-start cables	1m

AC Section (RPP120 & 135 models only)	
Output voltage	230 - 240v
Output frequency	50 – 60 Hz
Output waveform	Modified sine wave
No load current draw	< 0.20A
Input voltage	10.0 – 15.0 VDC
Overload/ Over temperature shutdown	Automatic
Output short circuit protection	Yes
Operating temperature range	0˚C – 40˚C

Distributed by:
Ring Automotive Gelderd Road, Leeds LS12 6NB
Tel: +44 (0)113 276 7676 Fax: +44 (0)113 231 0266
Email: autosales@ring.ltd.uk

L198

PowerPack

User Manual

RPP100 Standard
RPP110 Compressor
RPP120 Inverter
RPP135 Compressor & Inverter

Safety First

Before using this product please read these instructions carefully, paying particular attention to the safety warnings.
Misuse of the PowerPack may result in danger to the user. Pay special attention to all **'Caution'** and **'Warning!'** statements.
'Caution' statements identify conditions that may result in damage to the PowerPack or to other equipment.
'Warning!' statements identify conditions that may result in personal injury.
Shock Hazard Warning! Potential of shock hazard. Keep away from minors.

- This product generates 230 - 240v AC power as a normal household wall socket. Treat it with the same caution you would with a household wall socket. (RPP120 & RPP135 models only).
- Do not insert any objects into:
  The AC socket except BS approved mains appliances. (RPP120 & RPP135 *models only).*
  DC power socket, the jumper cable port, or any ventilation holes.
- Do not expose this product to water or temperatures of above 40˚C.
- Do not, under any circumstances, connect the PowerPacks AC outlet to utility power AC distribution wiring.

Warning! Explosion Hazard

- Do not use this product where there are flammable fumes or gases. Do not use this product in an enclosure containing automotive-type lead acid batteries. These batteries vent explosive hydrogen gas that can be ignited by sparks from electrical connections.
- **ONLY OPERATE IN A WELL VENTILATED SPACE.**

Getting Started

- **THE INTERNAL BATTERY MUST BE CHARGED FOR APPROXIMATELY 36 HOURS BEFORE FIRST USE.**

Powering 12v DC Products

The PowerPack is designed to run any 12v DC product that is intended to be powered from a vehicle's cigarette lighter socket. Simply insert the DC product plug into the DC power socket located on the side of the PowerPack.
If the 12v product is drawing in excess of 12 amps or has a short circuit defect, the PowerPack's internal circuit breaker will automatically switch off the power to the accessory. If this occurs, unplug your accessory and the circuit breaker will automatically reset itself after a few seconds.
Caution: Do not attempt to use the PowerPack as a jump-starter whilst using accessories through the DC outlet.
Caution: Ensure that when using the 12v DC power output sockets the adapter of the accessory you wish to power has the positive lead to the centre pin.

Using the Compressor (RPP110 & RPP135 models only)

The PowerPack has a built in 250psi compressor, which is suitable for vehicle tyres and many other inflatable objects such as footballs, inflatable camp beds etc.
On the back of the compressor is a secure compartment which houses all of the compressor adapters. Simply slide the cover off and choose which adapter is required.
Caution: GAUGE FOR INDICATION ONLY. CHECK WITH CALIBRATED GAUGE.

Warning! This compressor will not automatically shut off when the required pressure has been reached. Do not leave the compressor running unattended. Over inflating vehicle tyres can be dangerous. Refer to the vehicle's user manual for guidance on the correct tyre pressure.

Caution: To check the pressure in your tyres, the compressor must not be running. Place the air supply hose valve onto the tyre valve, lock on and read off the pressure gauge. The compressor must not be used whilst on charge from the vehicle DC outlet.

Powering AC Products (RPP120 & RPP135 models only)

The PowerPack is capable of powering most 230 - 240v AC products and equipment that uses 300W or less. The AC output waveform, called 'modified sine wave', is designed to function similarly to the sine wave shape of utility power.
The power, or 'wattage', rating of AC products is the average power they use. During the first moments that they are switched on, many products such as televisions, monitors and products with motors consume more power than their average rating. This product is designed to absorb these surges to some extent however, some products may exceed the PowerPack's capabilities and trigger the inverter's safety overload shutdown circuit.

Connecting Your AC Electrical Products

Plug the AC product you wish to operate into the AC outlet and switch the product on. After a brief initial surge the product should operate normally, just as it would if plugged into a wall socket. When the voltage on the battery of the PowerPack becomes low (10.7v) a low voltage warning will sound. This will give you time to save work on a computer etc, before the low voltage shut off switch is activated to prevent damage to the battery and will shutdown automatically (10.0v).

AC Safety Features

Automatic overload/overheat – the PowerPack's inverter has built-in protection against output overload and from overheating. If an AC product rated higher than 300W (or which draws excessive surge power on start up) is connected, or if the inverter exceeds a safe temperature, power will automatically shut off. An alarm will sound to let the user know if the inverter has shut off due to excessive heat. Allow cooling for 20 minutes before re-using.

Built-in Fluorescent Light

The switch to turn on the fluorescent light is located underneath the light. Slide the switch towards the right and stop at the first setting to illuminate just one bulb or the second setting for both bulbs. With the PowerPack fully charged it should be capable of illuminating both bulbs for up to 24 hours.

Vehicle Jump-starting

The Ring portable PowerPack is supplied with detachable jump-start cables, and can be used to jump-start a vehicle or boat that uses a 12v starting battery. The PowerPack has a unique jump-start safety feature that eliminates the sparking that sometimes occurs when jump-start cables are connected to a battery and because of this feature it is important that you follow the instructions shown below:

1. Turn off vehicle/boat ignition and all accessories.
2. Ensure the vehicle is parked safely and the parking brakes are applied. Please make sure the vehicle's gears are in a neutral position.
3. If jump-starting a boat engine, purge the engine compartment and bilge off all fumes before jump-starting.
4. Connect the jump-start cables to the PowerPack via the cable port.
5. Position the PowerPack on a flat stable surface near the battery and clear of all moving parts of the engine.
6. Connect the black negative (-) clip of the jump-start cables to the black negative (-) terminal of the depleted battery.
7. Connect the red positive (+) clip of the jumpstart cables to the red positive (+) terminal of the depleted battery.
8. If the positive and negative clips are connected correctly, the green 'battery clips correct' light will be illuminated. If the clips are not connected correctly the reverse polarity alarm will sound and the red 'battery clips incorrect' light will illuminate. Remove both clips to cancel the alarm and repeat steps 6 & 7.
9. Once the clips have been correctly connected and the green 'battery clips correct' light is illuminated, make sure the PowerPack and the cables are clear of engine belts and fans before attempting to start the engine.
   Warning! Do not remove the jump-start cables from the PowerPack port when the positive and negative clips are connected to the vehicle battery terminals. This will disable the jump-start safety feature and can result in sparking or ignition of flammable gases.
10. After the vehicle is started and while the cables are still connected, you can run the vehicle's engine at fast idle for 2 – 3 minutes to fast charge the PowerPacks internal battery. After recharging, remove the red positive (+) clip first followed by the black negative (-) clip.
    Note: All PowerPacks are fitted with internal voltage sensitive relays that control the polarity protection on the PowerPacks. These relays will not allow power to flow from the PowerPack to the vehicle's battery unless they detect a voltage of 1.5v +/- 0.5v. However if your vehicle battery is below this your battery may need replacing.

Jump-starting with Cigarette Lighter Socket

The following procedure will be sufficient to start a vehicle when its battery is not completely dead.

1. Connect your vehicles cigarette lighter socket (or 12v DC outlet) to the PowerPack's DC power socket using the DC charging cable supplied. You may need to switch the car ignition for the current to flow into the vehicle battery.
2. Wait 15 minutes while the PowerPack partially charges the vehicle battery. Then remove the DC charging cable from the PowerPack and then from the car cigarette lighter socket before starting the engine.

Recharging the PowerPack

Caution! Due to inherent self-discharge, lead acid batteries must be charged every 3 months, especially in a warm environment. Leaving a battery in a discharged state, or not recharging every 3 months, risks permanent damage.
Caution! Do not attempt to recharge the PowerPack if there is a possibility that the internal battery is frozen. A frozen battery should be gradually warmed to at least 5˚C before charging.